



## Appendix A. System Check Plots

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Test Laboratory: HUAWEI SAR/HAC Lab

## SystemPerformanceCheck-D835-EX-Body

**DUT: Dipole 835 MHz D835V2; Type: D835V2; Serial: D835V2 - SN:4d126**

Communication System: UID 0, CW; Frequency: 835 MHz; Duty Cycle: 1:1

Medium parameters used:  $f = 835$  MHz;  $\sigma = 1.002$  S/m;  $\epsilon_r = 54.799$ ;  $\rho = 1000$  kg/m<sup>3</sup>

Phantom section: Flat Section

DASY Configuration:

- ε Probe: EX3DV4 - SN7381; ConvF(9.78, 9.78, 9.78); Calibrated: 2016/9/29;
- ε Sensor-Surface: 1.4mm (Mechanical Surface Detection),  $z = 1.0, 31.0$
- ε Electronics: DAE4 Sn1492; Calibrated: 2016/9/28
- ε Phantom: SAM6; Type: QD 000 P40 CD; Serial: 1892
- ε DASY52 52.8.8(1222); SEMCAD X 14.6.10(7373)

**Configuration/d=15mm, Pin=250mW/Area Scan (6x13x1):** Measurement grid:  $dx=15$ mm,  $dy=15$ mm

Maximum value of SAR (measured) = 2.82 W/kg

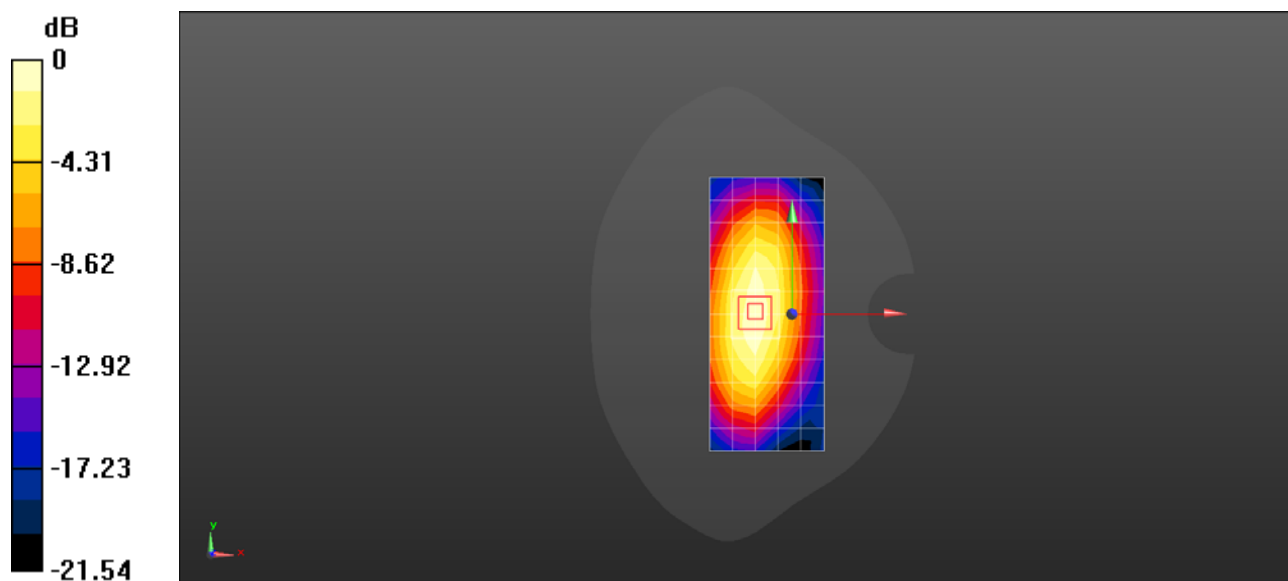
**Configuration/d=15mm, Pin=250mW/Zoom Scan (5x5x7)/Cube 0:** Measurement grid:  $dx=8$ mm,  $dy=8$ mm,  $dz=5$ mm

Reference Value = 46.32 V/m; Power Drift = -0.13 dB

Peak SAR (extrapolated) = 3.15 W/kg

**SAR(1 g) = 2.32 W/kg; SAR(10 g) = 1.6 W/kg**

Maximum value of SAR (measured) = 2.66 W/kg



0 dB = 2.82 W/kg = 4.51 dBW/kg

Test Laboratory: HUAWEI SAR/HAC Lab

## SystemPerformanceCheck-D1900-EX-Body

**DUT: Dipole 1900 MHz D1900V2; Type: D1900V2; Serial: D1900V2 - SN:5d143**

Communication System: UID 0, CW (0); Frequency: 1900 MHz; Duty Cycle: 1:1

Medium parameters used:  $f = 1900$  MHz;  $\sigma = 1.565$  S/m;  $\epsilon_r = 53.702$ ;  $\rho = 1000$  kg/m<sup>3</sup>

Phantom section: Flat Section

DASY Configuration:

- ε Probe: EX3DV4 - SN7381; ConvF(7.95, 7.95, 7.95); Calibrated: 2016/9/29;
- ε Sensor-Surface: 1.4mm (Mechanical Surface Detection),  $z = 1.0, 31.0$
- ε Electronics: DAE4 Sn1492; Calibrated: 2016/9/28
- ε Phantom: SAM6; Type: QD 000 P40 CD; Serial: 1892
- ε DASY52 52.8.8(1222); SEMCAD X 14.6.10(7373)

**Configuration/d=15mm, Pin=250mW/Area Scan (6x10x1):** Measurement grid:  $dx=15$ mm,  $dy=15$ mm

Maximum value of SAR (measured) = 14.5 W/kg

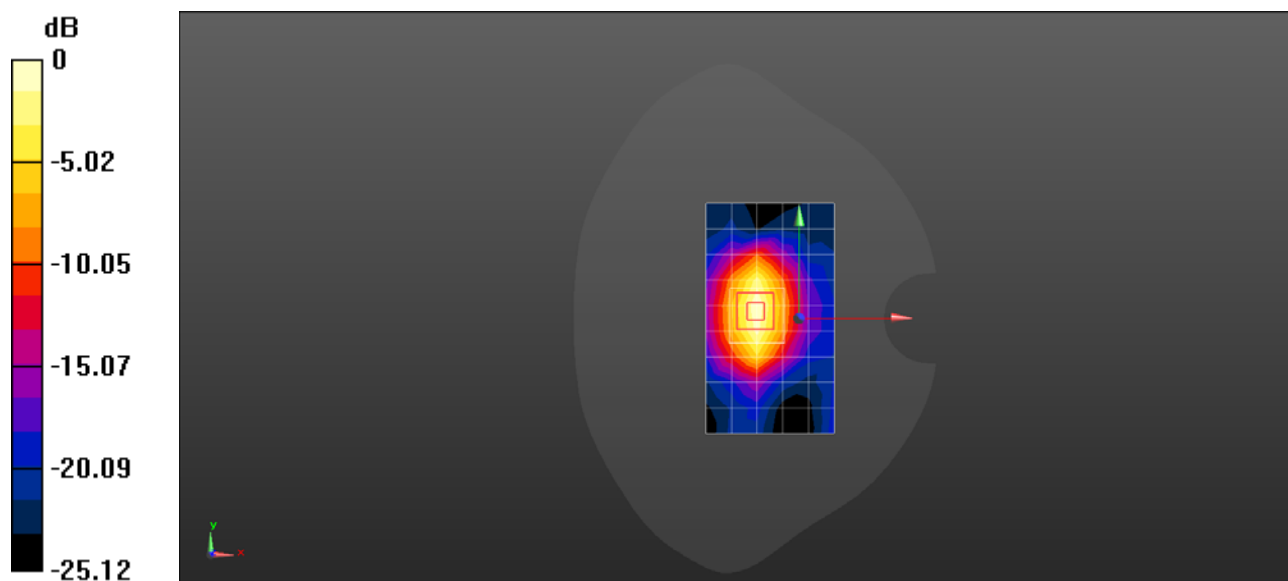
**Configuration/d=15mm, Pin=250mW/Zoom Scan (5x5x7)/Cube 0:** Measurement grid:  $dx=8$ mm,  $dy=8$ mm,  $dz=5$ mm

Reference Value = 65.56 V/m; Power Drift = -0.14 dB

Peak SAR (extrapolated) = 16.0 W/kg

**SAR(1 g) = 9.7 W/kg; SAR(10 g) = 5.24 W/kg**

Maximum value of SAR (measured) = 13.9 W/kg



0 dB = 14.5 W/kg = 11.61 dBW/kg

Test Laboratory: HUAWEI SAR/HAC Lab

## SystemPerformanceCheck-D2450-EX-Body

**DUT: Dipole 2450 MHz D2450V2; Type: D2450V2; Serial: D2450V2 -SN:978**

Communication System: UID 0, CW; Frequency: 2450 MHz; Duty Cycle: 1:1

Medium parameters used:  $f = 2450$  MHz;  $\sigma = 1.996$  S/m;  $\epsilon_r = 50.107$ ;  $\rho = 1000$  kg/m<sup>3</sup>

Phantom section: Flat Section

DASY Configuration:

- ε Probe: EX3DV4 - SN7381; ConvF(7.45, 7.45, 7.45); Calibrated: 2016/9/29;
- ε Sensor-Surface: 1.4mm (Mechanical Surface Detection),  $z = 1.0, 31.0$
- ε Electronics: DAE4 Sn1492; Calibrated: 2016/9/28
- ε Phantom: SAM6; Type: QD 000 P40 CD; Serial: 1892
- ε DASY52 52.8.8(1222); SEMCAD X 14.6.10(7373)

**Configuration/d=10mm, Pin=250mW/Area Scan (6x10x1):** Measurement grid:  $dx=12$ mm,  $dy=12$ mm

Maximum value of SAR (measured) = 17.0 W/kg

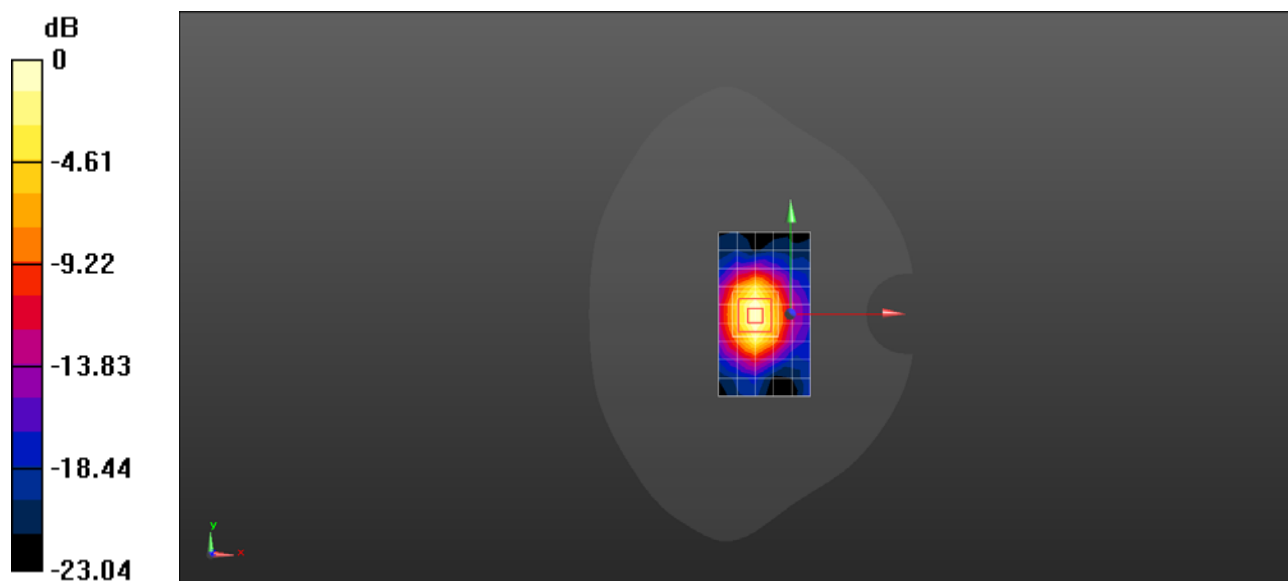
**Configuration/d=10mm, Pin=250mW/Zoom Scan (7x7x7)/Cube 0:** Measurement grid:  $dx=5$ mm,  $dy=5$ mm,  $dz=5$ mm

Reference Value = 69.82 V/m; Power Drift = 0.04 dB

Peak SAR (extrapolated) = 22.0 W/kg

**SAR(1 g) = 12 W/kg; SAR(10 g) = 5.85 W/kg**

Maximum value of SAR (measured) = 18.8 W/kg



0 dB = 17.0 W/kg = 12.30 dBW/kg

Test Laboratory: HUAWEI SAR/HAC Lab

## SystemPerformanceCheck-D2600-EX-Body

**DUT: Dipole 2600 MHz D2600V2; Type: D2600V2; Serial: D2600V2 - SN:1119**

Communication System: UID 0, CW; Frequency: 2600 MHz; Duty Cycle: 1:1

Medium parameters used:  $f = 2600$  MHz;  $\sigma = 2.193$  S/m;  $\epsilon_r = 52.721$ ;  $\rho = 1000$  kg/m<sup>3</sup>

Phantom section: Flat Section

DASY Configuration:

- ε Probe: EX3DV4 - SN7381; ConvF(7.19, 7.19, 7.19); Calibrated: 2016/9/29;
- ε Sensor-Surface: 1.4mm (Mechanical Surface Detection),  $z = 1.0, 31.0$
- ε Electronics: DAE4 Sn1492; Calibrated: 2016/9/28
- ε Phantom: SAM6; Type: QD 000 P40 CD; Serial: 1892
- ε DASY52 52.8.8(1222); SEMCAD X 14.6.10(7373)

**Configuration/d=10mm, Pin=250mW/Area Scan (6x9x1):** Measurement grid:  $dx=12$ mm,  $dy=12$ mm

Maximum value of SAR (measured) = 22.5 W/kg

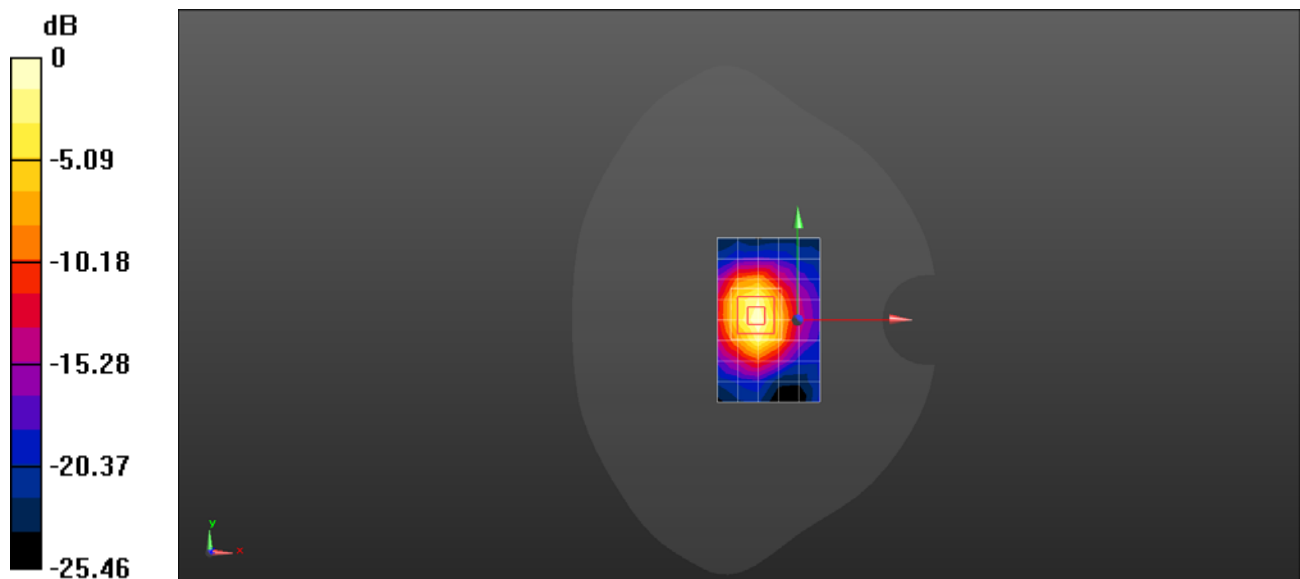
**Configuration/d=10mm, Pin=250mW/Zoom Scan (7x7x7)/Cube 0:** Measurement grid:  $dx=5$ mm,  $dy=5$ mm,  $dz=5$ mm

Reference Value = 69.04 V/m; Power Drift = -0.18 dB

Peak SAR (extrapolated) = 26.6 W/kg

**SAR(1 g) = 13.6 W/kg; SAR(10 g) = 6.3 W/kg**

Maximum value of SAR (measured) = 22.0 W/kg



0 dB = 22.5 W/kg = 13.52 dBW/kg

Test Laboratory: HUAWEI SAR/HAC Lab

## SystemPerformanceCheck-D2600-EX-Body

**DUT: Dipole 2600 MHz D2600V2; Type: D2600V2; Serial: D2600V2 - SN:1119**

Communication System: UID 0, CW; Frequency: 2600 MHz; Duty Cycle: 1:1

Medium parameters used:  $f = 2600$  MHz;  $\sigma = 2.171$  S/m;  $\epsilon_r = 52.25$ ;  $\rho = 1000$  kg/m<sup>3</sup>

Phantom section: Flat Section

DASY Configuration:

- ε Probe: EX3DV4 - SN7381; ConvF(7.19, 7.19, 7.19); Calibrated: 2016/9/29;
- ε Sensor-Surface: 1.4mm (Mechanical Surface Detection),  $z = 1.0, 31.0$
- ε Electronics: DAE4 Sn1492; Calibrated: 2016/9/28
- ε Phantom: SAM6; Type: QD 000 P40 CD; Serial: 1892
- ε DASY52 52.8.8(1222); SEMCAD X 14.6.10(7373)

**Configuration/d=10mm, Pin=250mW/Area Scan (6x9x1):** Measurement grid:  $dx=12$ mm,  $dy=12$ mm

Maximum value of SAR (measured) = 20.3 W/kg

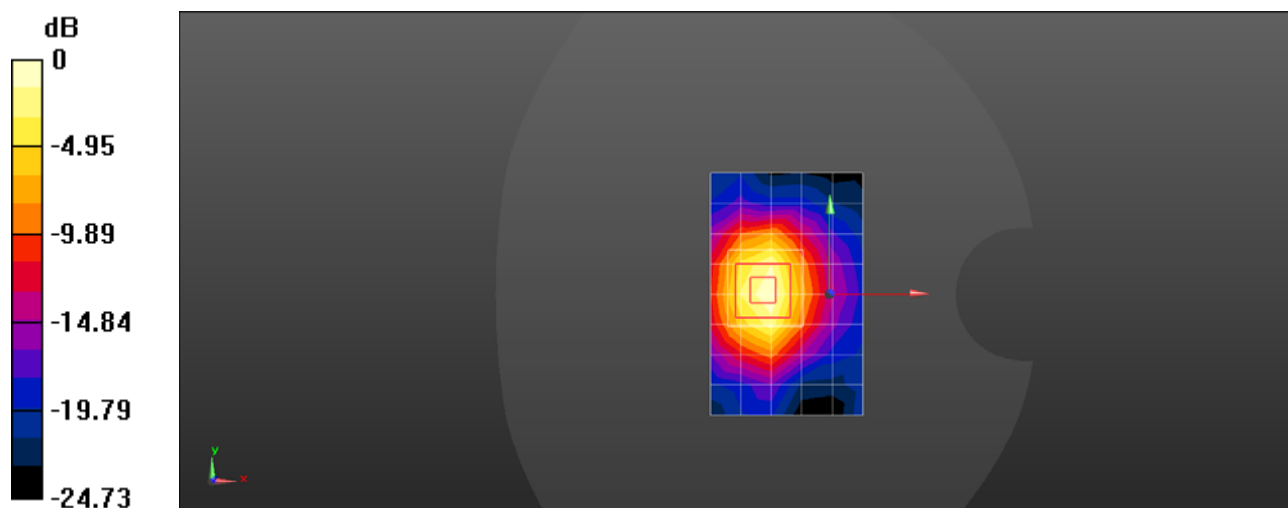
**Configuration/d=10mm, Pin=250mW/Zoom Scan (7x7x7)/Cube 0:** Measurement grid:  $dx=5$ mm,  $dy=5$ mm,  $dz=5$ mm

Reference Value = 61.82 V/m; Power Drift = 0.04 dB

Peak SAR (extrapolated) = 25.3 W/kg

**SAR(1 g) = 13.3 W/kg; SAR(10 g) = 6.29 W/kg**

Maximum value of SAR (measured) = 21.3 W/kg



0 dB = 20.3 W/kg = 13.08 dBW/kg

Test Laboratory: HUAWEI SAR/HAC Lab

## SystemPerformanceCheck-D5250-EX-Body

**DUT: Dipole D5GHzV2; Type: D5GHzV2; Serial: D5GHzV2 - SN:1155**

Communication System: UID 0, CW (0); Frequency: 5250 MHz;Duty Cycle: 1:1

Medium parameters used:  $f = 5250$  MHz;  $\sigma = 5.245$  S/m;  $\epsilon_r = 47.926$ ;  $\rho = 1000$  kg/m<sup>3</sup>

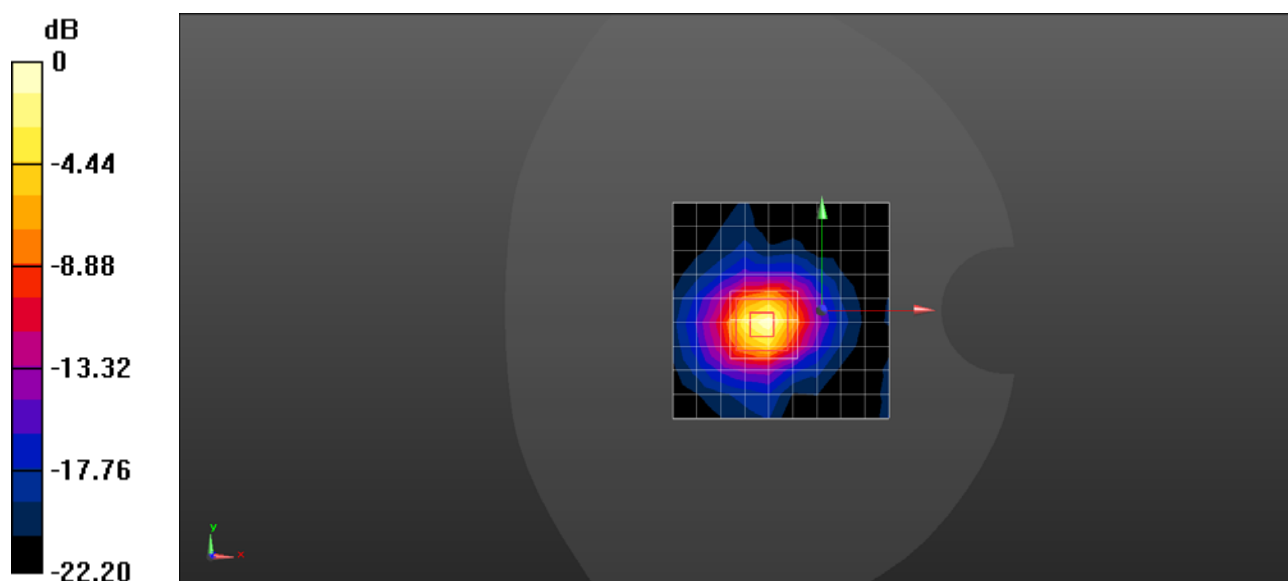
Phantom section: Flat Section

DASY Configuration:

- ε Probe: EX3DV4 - SN7381; ConvF(4.56, 4.56, 4.56); Calibrated: 2016/9/29;
- ε Sensor-Surface: 1.4mm (Mechanical Surface Detection),  $z = 1.0, 25.0$
- ε Electronics: DAE4 Sn1492; Calibrated: 2016/9/28
- ε Phantom: SAM6; Type: QD 000 P40 CD; Serial: 1892
- ε DASY52 52.8.8(1222); SEMCAD X 14.6.10(7373)

**System Performance Check with D5GHzV2 Dipole (graded grid)/d=10mm, Pin=100mW, f=5250 MHz/Area Scan (10x10x1):** Measurement grid: dx=10mm, dy=10mm  
Maximum value of SAR (measured) = 15.2 W/kg

**System Performance Check with D5GHzV2 Dipole (graded grid)/d=10mm, Pin=100mW, f=5250 MHz/Zoom Scan (4x4x1.4mm, graded), dist=1.4mm (8x8x7)/Cube 0:** Measurement grid: dx=4mm, dy=4mm, dz=1.4mm  
Reference Value = 37.37 V/m; Power Drift = 0.15 dB  
Peak SAR (extrapolated) = 22.5 W/kg  
**SAR(1 g) = 6.97 W/kg; SAR(10 g) = 2.19 W/kg**  
Maximum value of SAR (measured) = 15.4 W/kg



0 dB = 15.4 W/kg = 11.88 dBW/kg

Test Laboratory: HUAWEI SAR/HAC Lab

## SystemPerformanceCheck-D5750-EX-Body

**DUT: Dipole D5GHzV2; Type: D5GHzV2; Serial: D5GHzV2 - SN:1155**

Communication System: UID 0, CW (0); Frequency: 5750 MHz;Duty Cycle: 1:1

Medium parameters used:  $f = 5750$  MHz;  $\sigma = 5.938$  S/m;  $\epsilon_r = 47.017$ ;  $\rho = 1000$  kg/m<sup>3</sup>

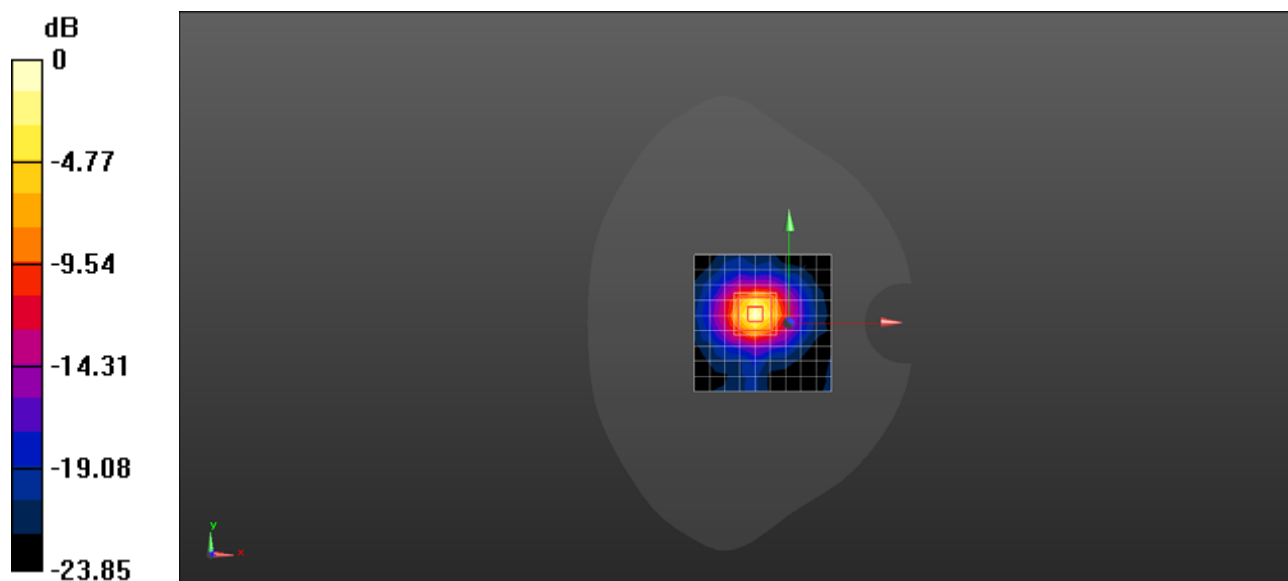
Phantom section: Flat Section

DASY Configuration:

- ε Probe: EX3DV4 - SN7381; ConvF(3.97, 3.97, 3.97); Calibrated: 2016/9/29;
- ε Sensor-Surface: 1.4mm (Mechanical Surface Detection),  $z = 1.0, 25.0$
- ε Electronics: DAE4 Sn1492; Calibrated: 2016/9/28
- ε Phantom: SAM6; Type: QD 000 P40 CD; Serial: 1892
- ε DASY52 52.8.8(1222); SEMCAD X 14.6.10(7373)

**System Performance Check with D5GHzV2 Dipole (graded grid)/d=10mm, Pin=100mW, f=5250 MHz/Area Scan (10x10x1):** Measurement grid: dx=10mm, dy=10mm  
Maximum value of SAR (measured) = 15.7 W/kg

**System Performance Check with D5GHzV2 Dipole (graded grid)/d=10mm, Pin=100mW, f=5250 MHz/Zoom Scan (4x4x1.4mm, graded), dist=1.4mm (8x8x7)/Cube 0:** Measurement grid: dx=4mm, dy=4mm, dz=1.4mm  
Reference Value = 41.55 V/m; Power Drift = -0.01 dB  
Peak SAR (extrapolated) = 22.7 W/kg  
**SAR(1 g) = 6.85 W/kg; SAR(10 g) = 2.18 W/kg**  
Maximum value of SAR (measured) = 15.4 W/kg



0 dB = 15.7 W/kg = 11.95 dBW/kg

## **System Validation**

Per FCC KDB 865664 D02v01, SAR system verification is required to confirm measurement accuracy. The SAR systems (including SAR probes, system components and software versions) used for this device were validated against its performance specifications prior to the SAR measurements. Reference dipoles are used with the required tissue-equivalent media for system validation, according to the procedures outlined in FCC KDB 865664 D01 and IEEE 1528-2013. Since SAR probe calibrations are frequency dependent, each probe calibration point must be validated at a frequency within the valid frequency range of the probe calibration point, using the system that normally operates with the probe for routine SAR measurements and according to the required tissue-equivalent media.

a tabulated summary of the system validation status, measurement frequencies, SAR probes, calibrated signal type(s) and tissue dielectric parameters has been included.

Table of SAR System validation summary:

| FREQ. | DATE      | PROBE SN | PROBE TYPE | PROBE CAL POINT |      | PERM             | COND         | CW VALIDATION |                |                | MOD.VALIDATION |               |      |
|-------|-----------|----------|------------|-----------------|------|------------------|--------------|---------------|----------------|----------------|----------------|---------------|------|
| [Mhz] |           |          |            |                 |      | ( $\epsilon_r$ ) | ( $\sigma$ ) | SENSI-TIVITY  | PROBE LINARITY | PROBE ISOTROPY | MOD. TYPE      | DUTY. FACTORE | PAR  |
| 835   | 2016/10/9 | 7381     | EX3DV4     | 835             | Body | 54.06            | 0.991        | PASS          | PASS           | PASS           | GMSK           | PASS          | N/A  |
| 1900  | 2016/10/9 | 7381     | EX3DV4     | 1900            | Body | 54.49            | 1.554        | PASS          | PASS           | PASS           | GMSK           | PASS          | N/A  |
| 2450  | 2016/10/9 | 7381     | EX3DV4     | 2450            | Body | 53.94            | 1.947        | PASS          | PASS           | PASS           | OFDM           | PASS          | PASS |
| 2600  | 2016/10/9 | 7381     | EX3DV4     | 2600            | Body | 51.88            | 2.204        | PASS          | PASS           | PASS           | TDD            | PASS          | N/A  |
| 5250  | 2016/10/9 | 7381     | EX3DV4     | 5250            | Body | 48.51            | 5.497        | PASS          | PASS           | PASS           | OFDM           | N/A           | PASS |
| 5750  | 2016/10/9 | 7381     | EX3DV4     | 5750            | Body | 49.03            | 5.985        | PASS          | PASS           | PASS           | OFDM           | N/A           | PASS |

NOTE: While the probes have been calibrated for both CW and modulated signals, all measurements were performed using communication systems calibrated for CW signals only. Modulations in the table above represent test configurations for which the measurement system has been validated per FCC KDB Publication 865664D01v01 for scenarios when CW probe calibrations are used with other signal types. SAR systems were validated for modulated signals with a periodic duty cycle, such as GMSK, or with a high peak to average ratio (>5dB), such as OFDM according to KDB 865664.